

CLAIMS

What is claimed is:

- 1 1. A method comprising:
2 broadcasting a first frame on a physical subnet the frame containing
3 a predetermined port number;
4 checking a response for a current address of a responding device;
5 and
6 forcing the responding device to change to a new protocol address if
7 the current protocol address is not within a access range of a management device
- 1 2. The method of claim 1 further comprising:
2 identifying an unused address to be used as the new protocol
3 address.
- 1 3. The method of claim 2 wherein identifying comprises:
2 iteratively querying addresses within the access range until no
3 response is received to a query.
- 1 4. The method of claim 1 wherein broadcasting a first frame
2 comprises:
3 setting a hardware address in the frame to all addresses;
4 setting an internet protocol (IP) address in the frame to all addresses;
5 and
6 setting a user datagram protocol (UDP) port number in the frame to
7 the predetermined port.
- 1 5. The method of claim 1 wherein forcing comprises:
2 broadcasting a second frame on the physical subnet directed to the
3 predetermined port number, the frame including a hardware address of the
4 responding device and the new protocol address.

1 6. A method comprising:
2 receiving at a device a forcing frame directed to a predetermined
3 port and including a hardware address of the device;
4 changing a current protocol address of the device to a new protocol
5 address specified in the frame, wherein the current protocol address is outside an
6 address range of a management device and the new protocol address is within
7 the address range of the management device; and
8 connecting to the management device using the new protocol
9 address.

1 7. The method of claim 6 further comprising:
2 enabling receipt of the frame directed to the predetermined port
3 only on a local port of the device; and
4 disabling receipt on the local port a fixed time after power up.

1 8. The method of claim 6 comprising:
2 receiving a first broadcast frame over a network from the
3 management device;
4 identifying if the first broadcast frame is directed to the
5 predetermined port; and
6 sending a response frame to a source of the first broadcast frame if
7 the first broadcast frame was directed to the predetermined port, the response
8 frame including a current protocol address.

1 9. The method of claim 6 wherein the forcing frame is a broadcast
2 frame specifying all hardware addresses and all protocol addresses.

1 10. The method of claim 8 wherein receiving a first broadcast packet
2 comprises:
3 snooping a hardware layer of a protocol stack for a frame directed to
4 the predetermined port; and

5 forwarding the frame past a protocol layer independent of a protocol
6 address if directed to the predetermined port.

1 11. The method of claim 8 wherein receiving a first broadcast frame
2 comprises:

3 passing the frame through a hardware layer and a protocol layer of a
4 protocol stack based on a selection of all addresses in a hardware address field and
5 a protocol address field of the first broadcast frame.

1 12. A system comprising:

2 a network element including a direct access module; and

3 a management node residing on a same physical subnet as the

4 network element, the management node to force the network element to have
5 an address within an access range of the management node by broadcasting to the
6 direct access module without reconfiguring the management node.

1 13. The system of claim 12 wherein the management node and the
2 network element are coupled together by an Ethernet connection.

1 14. The system of claim 12 wherein the network element further
2 includes a packet filter to snoop packets arriving at a hardware layer of a protocol
3 stack.

1 15. The system of claim 12 wherein the network element comprises:
2 an external port; and
3 an internal port, wherein the direct access module is only enabled
4 on the internal port.

1 16. The system of claim 15 wherein the direct access module is disabled
2 a predetermined time after power up.

1 17. The system of claim 12 wherein the direct access module receives
2 frames directed to a predefined port independent of a protocol address.

1 18. The system of claim 12 wherein the management node can use
2 higher level protocols to manage the network element immediately after forcing
3 the address.

1 19. A computer readable storage media containing executable computer
2 program instructions which when executed cause a digital processing system to
3 perform a method comprising:

4 broadcasting a first frame on a physical subnet the frame containing
5 a predetermined port number;

6 checking a response for a current address of a responding device;

7 and

8 forcing the responding device to change to a new protocol address if
9 the current protocol address is not within a access range of a management device.

1 20. The computer readable storage media of claim 19 which when
2 executed cause a digital processing system to perform a method further
3 comprising:

4 identifying an unused address to be used as the new protocol
5 address.

1 21. The computer readable storage media of claim 20 which when
2 executed cause a digital processing system to perform a method further
3 comprising:

4 iteratively querying addresses within the access range until no
5 response is received to a query.

1 22. The computer readable storage media of claim 19 which when
2 executed cause a digital processing system to perform a method further
3 comprising:

4 setting a hardware address in the frame to all addresses;

5 setting an internet protocol (IP) address in the frame to all addresses;
6 and
7 setting a user datagram protocol (UDP) port number in the frame to
8 the predetermined port.

1 23. The computer readable storage media of claim 19 which when
2 executed cause a digital processing system to perform a method further
3 comprising:

4 broadcasting a second frame on the physical subnet directed to the
5 predetermined port number, the frame including a hardware address of the
6 responding device and the new protocol address.

1 24. A computer readable storage media containing executable computer
2 program instructions which when executed cause a digital processing system to
3 perform a method comprising:

4 receiving at a device a forcing frame directed to a predetermined
5 port and including a hardware address of the device;

6 changing a current protocol address of the device to a new protocol
7 address specified in the frame, wherein the current protocol address is outside an
8 address range of a management device and the new protocol address is within
9 the address range of the management device; and

10 connecting to the management device using the new protocol
11 address.

1 25. The computer readable storage media of claim 24 which when
2 executed cause a digital processing system to perform a method further
3 comprising:

4 enabling receipt of the frame directed to the predetermined port
5 only on a local port of the device; and

6 disabling receipt on the local port a fixed time after power up.

1 26. The computer readable storage media of claim 24 which when
2 executed cause a digital processing system to perform a method further
3 comprising:
4 receiving a first broadcast frame over a network from the
5 management device;
6 identifying if the first broadcast frame is directed to the
7 predetermined port; and
8 sending a response frame to a source of the first broadcast frame if
9 the first broadcast frame was directed to the predetermined port, the response
10 frame including a current protocol address.

1 27. The computer readable storage media of claim 24 which when
2 executed cause a digital processing system to perform a method further
3 comprising:
4 the forcing frame is a broadcast frame specifying all hardware
5 addresses and all protocol addresses.

1 28. The computer readable storage media of claim 26 which when
2 executed cause a digital processing system to perform a method further
3 comprising:
4 snooping a hardware layer of a protocol stack for a frame directed to
5 the predetermined port; and
6 forwarding the frame past a protocol layer independent of a protocol
7 address if directed to the predetermined port.

1 29. The computer readable storage media of claim 26 which when
2 executed cause a digital processing system to perform a method further
3 comprising:
4 passing the frame through a hardware layer and a protocol layer of a
5 protocol stack based on a selection of all addresses in a hardware address field and
6 a protocol address field of the first broadcast frame.